Transient Foams of Nonionic Surfactants in Aqueous Solutions of Alkanolamines

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We present in this work results on the behavior of transient foams of four antifoaming agents: 2,5,8,11-tetramethyldodeca-6-yne-5,8-diol ($C_{16}H_{30}O_2$), 2,4,7,9-tetramethyl-5-decyne-4,7-diol ($C_{14}H_{24}(OCH_2CH_2)_{30}OH$), polyoxyethylene(2) oleyl ether ($C_{18}H_{35}(OCH_2CH_2)_2OH$), polyoxyethylene sorbitan monooleate ($C_{64}H_{124}O_{26}$), and oleilic alcohol ($C_{18}H_{26}O$), which were added in different concentrations to an aqueous solution of diethanolamine (DEA) and N-methyldiethanolamine (MDEA) with a total concentration of the amines of 45.0 mass %, at 313.15 and 323.15 K. The measurements of the foam stability index were performed using an all-glass apparatus based on the circulation method. We also present the behavior of the equilibrium surface tension as a function of concentration for the same systems obtained with the pendent drop method. The experimental data of the equilibrium surface tension have been used together with the well known Gibbs elasticity modulus as a function of surface concentration in order to find a correlation with the observed behavior for the foam stability index. The experimental data of the equilibrium surface tension were correlated by means of a Langmuir extended equation.